F-78-R-2 Ve
Region 1

MONTANA FISH, WILDLIFE & PARKS

FISHERIES DIVISION
JOB PROGRESS REPORT

STATE:	MONTANA	PROJECT TITLE:	STATEWIDE FISHERIES INVESTIGATIONS
PROJECT NO.:	F-78-R-2	STUDY TITLE:	SURVEY AND INVENTORY OF COLDWATER AND WARMWATER ECOSYSTEMS
JOB NO.:	V-a	JOB TITLE:	FLATHEAD LAKE-RIVER SYSTEM STUDY

PROJECT PERIOD: JULY 1, 1995 THROUGH JUNE 30, 1996

ABSTRACT

Department personnel continued annual monitoring of Flathead Lake and River fish populations. Data analysis is generally incomplete and in process to date. In an attempt to reestablish a kokanee salmon (*Oncorhynchus nerka*) fishery, the Department, under Hungry Horse Dam Mitigation, continued large plants of yearling kokanee into Flathead Lake and monitored survival. Personnel worked with other agencies and private landowners to minimize degradation of stream habitat through administration of habitat protection laws. Personnel increased public awareness of aquatic resource issues and protection through educational programs and public meetings.

BACKGROUND

The Flathead Lake/River system located in northwest Montana consists of Flathead Lake, the Flathead River above Kerr Dam, that portion of the South Fork Flathead River below Hungry Horse Dam, the Swan River below Bigfork Dam, the Whitefish River below Whitefish Lake, and the North and Middle Forks of the Flathead River and their major tributaries as used for spawning and rearing. The system is managed as one ecosystem due to the adfluvial nature of several of the major gamefish species in the system. These adfluvial fish also interact with lake and river resident stocks, further underscoring the interdependency of the lake and river fisheries.

The major sportfish species in the lake include westslope cutthroat trout (*Oncorhynchus clarki*), bull trout (*Salvelinus confluentus*), lake trout (*S. namaycush*), lake whitefish (*Coregonus clupeaformis*) and yellow perch (*Perca flavescens*). The major sportfish in the river are westslope cutthroat trout, bull trout, and mountain whitefish (*Prosopium williamsoni*) and rainbow trout (O. mykiss). Scattered populations of largemouth bass (*Micropterus salmoides*) and northern pike (*Esox lucius*) occur in old oxbows of the river.

Flathead Lake, measuring 125,000 surface acres, is currently one of the most heavily fished waters in Montana. The lake supports about 75,000 angler-days per year for trout and perch. Kokanee (Oncorhynchus nerka) were once the predominant gamefish in the lake and abundant seasonally in the river but have declined dramatically in numbers in recent years due to a combination of hydropower impacts, predation, angling harvest and impacts from Mysis.

Flathead River and its forks support one of the most extensive adfluvial fisheries in Montana. Westslope cutthroat and bull trout migrate as much as 140 miles to spawn in their natal stream.

PROJECT OBJECTIVES AND DEGREE OF ATTAINMENT

Activity 1 - Survey and Inventory
Objective: To survey and monitor the characteristics and trends of fish populations, angler harvest and preferences, and to assess habitat conditions in selected waters.

This objective was attained. Department personnel completed annual monitoring including spring gill net series on Flathead Lake, fall hydroacoustic survey of Flathead Lake fish abundance, redd count surveys of bull trout, westslope cutthroat trout, and rainbow trout spawning streams, and juvenile trout abundance estimates in Flathead River tributaries. In addition, personnel conducted and are analyzing an angler creel survey on Flathead Lake. Personnel conducted annual monitoring of stream substrate composition to assess level of degradation of trout spawning habitat. Continued to monitor survival of kokanee planted in Flathead Lake. Reported findings in "Kokanee Stocking and Monitoring Flathead Lake - Annual Report 1995 (Hansen et al. 1996).

Activity 2 - Fish Population Management
Objective: To implement fish stocking programs and/or fish eradication actions to maintain fish populations at levels consistent with habitat conditions and other limiting factors.

This objective was partially attained. Planted 950,000 yearling and 1,000,000 young-of-year kokanee in Flathead Lake in 1996 and monitored survival. Continue to evaluate the feasibility of using hatchery reared kokanee to increase kokanee numbers to meet angler demands in Flathead Lake. Hatchery plants of one million kokanee yearlings will be made over the next two years.

Activity 3 - Technical Guidance
Objective: To review projects by government agencies and private parties which have the potential to affect fisheries resources, provide technical advice or decisions to mitigate effects on these resources, and provide landowners and other private parties with technical advice and information to sustain and enhance fisheries resources.

This objective was attained. Department personnel advised the Flathead Conservation District in implementation of the Montana Natural Streambed and Land Preservation Act to minimize sedimentation and bank erosion, prevent damage to streambanks and bed from human activities,

and preserve stream in natural conditions. Administered the Montana Stream Protection Act protecting streambanks and bed during construction of government projects. Advised the Flathead County on projects regarding lake bed protection laws.

Under implementation of the Hungry Horse Dam fisheries mitigation program construction was completed for a selective withdrawal structure on Hungry Horse Dam which will maintain natural water temperatures downstream in the Flathead River. In addition, we influenced management of dam operation and river flows.

Activity 4 - Aquatic Education
Objective: To enhance the public's understanding, awareness and support of the state's fishery and aquatic resources and to assist young people to develop angling skills and to appreciate the aquatic environment.

This objective was attained. Department personnel met with numerous sportsmen groups, Rotary and Lion clubs, and other publics. Personnel spoke with various classes of grade students regarding fishery issues and the aquatic environment and with all fifth grade students in Flathead County. Personnel also conducted "kids fishing clinics" to teach angling skills and resource values. Department encourage public participation in resource issue decisions through dissemination of information at public meetings.

PROCEDURES

Flathead Lake Gill Net Surveys - Sinking and floating gill nets were set at specific locations and depths. Nets fished overnight. All captured fish were enumerated, measured, and weighed. Stomach contents were examined to determine food habits and kokanee consumption.

Redd Count Surveys - Following completion of spawning, personnel walked predetermined reaches of streams and counted completed redds of either westslope cutthroat trout, rainbow trout, or bull trout.

Electrofishing Population Estimates - Using two-pass methodology, we electrofished 500 foot sections of stream. Collected fish were enumerated, measured, and weighed. A block net was positioned at the downstream end of the section to prevent downstream fish movement.

Flathead Lake Hydroacoustic Survey - Surveys were conducted at night along predetermined randomly selected transects using Biosonic equipment. Sinking and vertical gill nets were set to determine fish species composition at specific depth strata and locations.

RESULTS AND DISCUSSION

Fieldwork was completed for all monitoring surveys included in this project. Data analysis is incomplete and in process. We will be combining 1995-1996 results with sampling from prior years in an effort to update and enlarge the Flathead Basin database.

Kokanee planting success and survival results are reported in "Kokanee Stocking and Monitoring Flathead Lake - Annual Progress Report (Hansen et. al 1996).

LITERATURE CITED

Hansen B., Cavigli J., Deleray M., Fredenberg W. 1996. Kokanee Stocking and Monitoring Flathead Lake - Annual Progress Report. Report to Bonneville Power Administration.

RECOMMENDATIONS

1. Negotiate Flathead Lake level management or mitigation with Montana Power Company through FERC relicensing to maintain lake levels that are sufficient to maintain or enhance fish populations at existing levels.

2. Negotiate river flows with the Northwest Power Planning Council to maintain levels that are sufficient to maintain or enhance fish populations at existing levels.

3. Evaluate the feasibility of using hatchery reared yearling (I+) kokanee releases in the lake in an effort to restore and increase kokanee numbers to meet angler demands. Assess and identify the impact of the Mysis population in the lake on kokanee and other fish species.

4. Monitor trout species in the lake and river to evaluate the effectiveness of new regulations on bull and lake trout in controlling harvest and to monitor present growth conditions. Acoustical data should be summarized by depth intervals.

5. Annually monitor the bull trout spawning escapement by enumerating redds on selected streams in the North and Middle Fork River drainage as part of a system population evaluation.

6. Monitor bull trout, cutthroat trout, lake whitefish and lake trout populations through netting surveys and a cooperative angler tagging program to establish annual population status levels and catch rates to aid in the maintenance of fish populations that can sustain acceptable use and harvest levels.

7. Annually monitor stream bottom substrate composition and population estimates of juvenile bull trout and cutthroat trout on selected streams in the North and Middle Fork River drainage to assess fish embryo survival as stream environments change resulting from man's activities.

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